CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 95-193

SITE CLEANUP REQUIREMENTS FOR:

UNITED TECHNOLOGIES CORPORATION,
(CHEMICAL SYSTEMS DIVISION - COYOTE CENTER)

OPERABLE UNIT 2

600 METCALF ROAD
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board), finds that:

1. **Site Location**: United Technologies Corporation (UTC), hereinafter also referred to as the discharger, owns and operates the Chemical Systems Division - Coyote Center in Santa Clara County as shown in Figure 1. The site is located in an unincorporated area of Santa Clara County approximately five miles south of San Jose and four miles east of U.S. Highway 101. The site is located in an area of rolling hills and relatively broad valleys. OU2 consists of the side valleys and an area called the Panhandle. OU1 consists of the two main valleys within the developed portion of the site called Shingle Valley and Mixer Valley. The creeks that flow through the site ultimately discharge into Anderson Reservoir.

2. **Site History**: UTC began on-site operation in 1959 and occupies 5,200 acres including over 200 stations used for laboratories, research, testing, manufacturing, storage, maintenance, and administration. The discharger develops, manufactures, and tests space and missile propulsion systems.

   Land usage in surrounding areas is zoned mostly for agricultural use. Ranch lands are located to the north, east, and southeast of UTC. To the northwest and west are two regional parks and some open public land. The nearest residences are a few ranch houses or other dwellings located within 3,000 feet to the north, northeast, and southeast of the site boundaries.

   Solid rocket motors are filled with propellants designed to cause a controlled oxidation reaction which releases large amounts of energy and gas. Solid rocket propellants are typically synthetic rubber with reactive materials suspended in the rubber matrix. The typical materials used on-site are polybutadiene acrylic acid acrylonitrile terpolymers

(PBAN), ammonium perchlorate, aluminum powder, and di-isocyanates. HMX and nitroglycerine are added to some propellants to enhance energy levels. Nonexplosive hazardous materials used in the operation include epoxies, paints, and insulating materials.

Degreasing agents consisting of chlorinated and non-chlorinated solvents (primarily trichloroethylene (TCE) and 1,1,1-trichloroethane (TCA) have been widely used throughout the site to dissolve the highly adhesive PBAN polymer from mixing bowls and blades, and casting hardware. Historically, spent solvents were collected for evaporation in on-site surface impoundments or shipped off-site for recycling or disposal.

3. **Named Discharger:** United Technologies Corporation-Chemical Systems Division is the named discharger based on chemical use and activities, based on soil and groundwater investigation, and because they are the current property owner.

If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on site where it entered or could have entered waters of the State, the Board will consider adding that party's name to this order.

4. **Study Area**: The UTC site has been divided into seven investigative areas as shown in Figure 1 and as follows:

- Upper Shingle Valley & Research and Advanced Technology Area
- Middle Shingle Valley
- Lower Shingle Valley
- Mixer Valley
- Panhandle
- Motor Test Area
- Motor Assembly Area and Component Test Area

The site has been divided into two Operable Units (OUs) as shown in the following table and Figure 2. Investigation in OU1 which consists of Shingle Valley and Mixer Valley is essentially complete and final site cleanup requirements was adopted for OU1 in May of 1994. OU2 is still under investigation and this order addresses investigations in OU2. The following table lists the Operable Units and their description:

OPERABLE UNIT	DESCRIPTION
1	Shingle Valley and Mixer Valley, SCR adopted in May 1994.
2	Side Valleys: Research and Advanced Technology Area Motor Test Area Motor Assembly Area/Component Test Area Panhandle (Open Burning Facility)

The advantage of defining two operable units is that Operable Unit 1, where characterization work is essentially complete, can proceed with final cleanup without awaiting the results of further characterization work in Operable Unit 2.

5. **Creeks:** Local creeks provide a potential conduit to carry VOCs and other contaminants toward Anderson Reservoir. There are indications that groundwater and surface water are in contact, and therefore contaminants are detected in surface waters. Preventing or minimizing contaminants in surface waters is a high priority, in order to prevent the spread of contaminants and protect the beneficial uses of Anderson Reservoir. In addition, excessive concentrations of VOCs in creeks could cause acute or chronic toxicity to aquatic life. It is appropriate to prohibit detectable concentrations of contaminants in surface waters at or beyond the property boundary, in order to assure protection of the existing beneficial use downstream. It is appropriate to allow low concentrations of contaminants in on-site surface waters, provided that these concentrations do not exceed groundwater cleanup standards and are protective of freshwater aquatic life.

6. **Site Investigations**: The bulk of the investigation to date is included in the following reports: Source Identification and Characterization Reports Part I Revised and Part II dated May 1991 and June 1990, respectively, RCRA Facility Investigation/Corrective Measure Study dated June 1991, and its addendum dated June 1993, Human and Environmental Health Evaluation, Parts I & II dated November and December 1992, and Side Valley Groundwater Characterization Report: Process Development Complex and Research and Advanced Technology Area dated November 1994, Hydrogeologic Assessment For Design of Groundwater Remediation System at the Open Burning Facility dated March 1992, Open Burning Facility Soils Investigation and Corrective Measure Study dated June 1992, Open Burning Facility Interim Soil Remediation Status Report (Panhandle) dated May 1993, and Evaluation and Workplan for Improvement of the Groundwater Extraction System at the Open Burning Facility (Panhandle) dated July 1994.

Site investigation in OU2 is described for each area as follows:

6.1. Research and Advanced Technology Area

Research and Advanced Technology Area (R&AT area) is located within Splinter Valley, a northeastward trending tributary valley to Upper Shingle Valley (Figure 3). Operations consist of research-scale rocket propellant preparation, mixing, casting, curing, and testing. UTC began operations in this area in 1963. There are currently thirty-four stations at the R&AT Area which accommodate administration, laboratory, preparation, mixing, assembly, testing, and storage facilities.

Station 1710 is a five-gallon propellant mixer station that is located in the hills

overlooking the R&AT area. This station is situated on the Santa Clara Formation, approximately 800 feet from the nearest creek and 600 feet from the alluvium surface contact. A sump pump located in the basement of the facility was found to periodically pump water from the sump to the ground near the southwest corner of the building at a rate of up to 250 gallons per day for an unknown period of time. The discharged water ultimately drained into a southeasterly sloping ditch which intersects the Splinter Valley Creek. In 1994 a water sample was collected from the sump and showed that the sump water contained 68 μg/l of TCE and 1.6 μg/l of 1,1,1-TCA. Since then the discharge from the sump is routed to a collection tank for treatment. The origin of water in the sump is unknown. The source of VOCs in water is probably related to past activities at Station 1710. Soil samples collected in the vicinity of station 1710 have not detected VOCs greater than 1 mg/kg in soil. Based on groundwater data collected it appears that there is a localized water-bearing unit in the vicinity of station 1710 at a depth of approximately 35 feet bgs. However, this water-bearing unit appears to be discontinuous and does not extend to the alluvial surface contact and the valley floor approximately 600 feet away. Therefore, station 1710 does not appear to be the source of groundwater contamination downgradient in the valley.

6.1.a. Site Geology and Hydrogeology: Splinter Valley cuts across the northwest section of the UTC site, and surrounds the stations that comprise the R&AT area. The width of Splinter Valley floor varies from 250 to 350 feet. The valley floor is relatively flat, exhibiting a slight northeastward dip, however, the southwest portion of Splinter Valley steeply slopes to the northeast. Splinter Valley is flanked by Santa Clara Formation ridges to the southeast, and west.

Soils underlying the R&AT area consist of a heterogeneous mix of alluvial soils underlain by the Santa Clara Formation. The alluvium has a maximum thickness of 50 feet. The alluvium consist of lenses and/or layers of clays and silts, underlain by more permeable sands and gravels. Groundwater within the R&AT area occurs primarily within the alluvium at an approximate depth of 28 feet to 34 feet bgs. The R&AT area alluvium is found in channels carved into the generally less permeable and tilted deposits of the Santa Clara Formation. Groundwater generally flows with the topography down the side valleys and drains within the alluvium. The approximate direction of groundwater flow in the alluvium is to the northeast at an average hydraulic gradient of 0.03 ft/ft. The direction of groundwater flow and the gradient in the Santa Clara Formation are not defined. The main surface drainage in the R&AT area is Splinter Creek. The presence of water in Splinter creek is highly seasonal and generally only occurs during and shortly after rainfall. Splinter creek bisects the Splinter Valley floor and continues downgradient to the northeast where it converges with Shingle Creek approximately 300 feet east of the northwest property boundary. Historical groundwater elevations in the R&AT area indicate that groundwater does not

contribute to creek surface water.

6.1.b. Remedial Investigation: Soil investigation conducted in the R&AT area has detected low levels of VOCs, none of which exceed 1 mg/kg. Perchlorate has been detected at a maximum concentration of 690 mg/kg. In groundwater VOCs have been detected at concentrations ranging from ND to a maximum of 50 μg/l of unknown VOCs once in 1988 in well RAT-03 in the Santa Clara Formation. However, VOC concentrations in the Santa Clara well RAT-03 have been non-detect since 1989. The chemicals that have been historically detected are Trichloroethene (TCE) at concentrations ranging from ND to 9 μg/l, 1,1,1-Trichloroethane (TCA) at concentrations ranging from ND to 11 μg/l, 1,1-Dichloroethene (1,1-DCE) at concentrations ranging from ND to 6 μg/l and 1,1-Dichloroethane (1,1-DCA) at concentrations ranging from ND to 8 μg/l. Chemicals that were detected above MCLs are TCE and 1,1-DCA. Historically, VOCs have been detected in alluvial wells, and sporadically in the Santa Clara well RAT-03. Well Al-05 is located in extreme Upper Shingle Valley, approximately 400 feet east and downgradient of the northeast terminus of Splinter Valley. The well is situated at the confluence of Splinter and Shingle Creeks and is screened in the alluvium. This well which is in the general downgradient direction of the R&AT area surface water flow and the anticipated general direction of alluvial groundwater flow has not historically detected VOCs.

6.1.c. Interim Measures: Except for the Station 1710 pump and treat system for the sump water no interim measures have been implemented in the R&AT area, because of low concentrations of chemicals in groundwater, and the fact that a source in soil was not found. Groundwater monitoring is scheduled to continue for two years and if groundwater concentrations continue to be below MCLs the wells are to be decommissioned.

6.2. Motor Test Area

The Motor Test Area (MTA) is located on Solid Road within a tributary valley that connects to Middle Shingle Valley (Figure 3). Operations consist of assembly, storage and testing of space and missile propulsion systems. UTC began operations at MTA in 1960. There are currently thirty-six stations at the MTA which accommodate administration, motor assembly, motor conditioning, test bays, and storage facilities.

The solid rocket motors tested at the MTA contain propellant typically composed of a fuel (aluminum), and an oxidizer (ammonium perchlorate) suspended in a synthetic rubber (polybutadiene) co-polymer matrix. In addition to these materials, chlorinated and non-chlorinated solvents have been used for degreasing motor cases, subassemblies, and cleaning equipment.

6.2.a. Site Geology and Hydrogeology:

The tributary valley which surrounds the MTA is located in the west-central portion of the UTC site. This tributary valley merges with Middle Shingle Valley to the northeast, near the intersection of Solid and Shingle Valley roads. The stations located within the MTA are flanked by Santa Clara Formation ridges. The MTA Valley measures approximately three quarters of a mile in length and varies in width from 400 to 600 feet. The northeasterly slope of the valley alternates from relatively shallow in central MTA to steep in the east and west portions of the valley.

Most MTA stations are located in the hills comprised primarily of Santa Clara Formation. A few MTA stations are located on unconsolidated Quaternary alluvial deposits that unconformably overly the Santa Clara Formation. These alluvial deposits are derived from the Santa Clara Formation and are characterized by clays, silts, sands and gravels in varying proportions. The alluvium is characterized by considerable lateral variations in soil type and character. Data indicates that the alluvial deposits in MTA are relatively shallow. The alluvium is believed to reach its maximum thickness towards the axis of the valley and is thin towards the valley walls.

The Santa Clara Formation forms the ridges enclosing MTA, and comprises the geologic bedrock material underlying and bordering the young alluvium of MTA. The strike of the Santa Clara Formation in MTA is to the northwest, which is characteristic of this region. In the vicinity of MTA, the Santa Clara Formation consists of interfingered layers and lenses ranging from clays to sandy gravels which dip approximately 45 degrees to the northeast.

The Santa Clara Formation, like the alluvium, is characterized by considerable lateral variation. Although some lateral continuity of discrete units has been observed during mapping, exploratory drilling conducted throughout Shingle Valley demonstrates that significant, discrete units can pinch-out over a relatively short distance. This characteristic of occurrence, typical of fluvial deposits, appears to limit the lateral extent of individual layers and, most importantly, the extent of discrete water-bearing units.

Groundwater has been encountered at elevations ranging from 14 feet to 42 feet bgs at the MTA. Groundwater within the alluvium migrates in the northeast direction. This groundwater flow direction is similar to local surface drainage pattern. There does not appear to be a hydraulic connection between the water - bearing zones within the alluvium and the Santa Clara Formation.

6.2.b. Remedial Investigations:

Historical chemical use was evaluated for all the stations in the MTA. Correlations were made with those compounds most frequently used and those found in soil and groundwater at the MTA.

TCA is known to have been used in small quantities at numerous stations in the MTA to clean equipment parts. The highest concentration of TCE in soil was detected east of station 1318 at 0.047 mg/kg. TCE has been detected in groundwater in well MTA-02 up to 130 μg/l. Sampling of recently installed well 19L-01 has detected Freon 11 at 8,600 μg/l and TCE at 35 μg/l. The other 5 wells in the MTA have not detected TCE above MCLs. Total DCE has been detected in soil at a maximum concentration of 0.104 mg/kg. DCE has not been detected in groundwater in the MTA. The source and extent of TCE and freon contamination in groundwater in MTA is not fully defined.

6.2.c. No interim measures have been implemented at the MTA.

6.3. Motor Assembly Area/Component Test Area (MAA/CTA)

The stations that comprise the MAA/CTA are located entirely in the hills that rise above the southwestern portion of Middle Shingle Valley (Figure 3). The MAA is comprised of six stations (1860 and 1862 through 1866). The CTA is located immediately southeast of MAA. There are eight current or former stations that make up the CTA. Historical operations at the MAA/CTA involved high energy rocket motor assembly, small motor preparation, specialty circuit manufacturing, and component testing. This area was constructed in the early 1960s and used extensively through the late 1970s. Since then the MAA/CTA has been used in a limited capacity.

The solid rocket motors assembled at the MAA/CTA contain propellant typically composed of a fuel (aluminum), an oxidizer (ammonium perchlorate) and additives such as HMX and nitroglycerine, suspended in a synthetic rubber (polybutadiene) co-polymer matrix. In addition to these materials, chlorinated and non-chlorinated solvents have been used for degreasing motor cases, subassemblies, and cleaning equipment.

6.3.a. Site Geology and Hydrogeology:

The hills that MAA/CTA stations are located in are composed predominantly of the Santa Clara Formation. The majority of soils that comprise the Santa Clara Formation are fine-grained or a combination of fine- and coarse-grained materials. Well-graded, coarse-grained soils have not been observed within the MAA/CTA Santa Clara Formation. The Santa Clara Formation in this area has been observed to dip approximately 25 degrees to 45 degrees to the northeast.

A Quaternary landslide is present east of the MAA. This landslide, located approximately downslope from stations 1830 and 1860, is about 1200 feet long and 350 feet wide. The landslide appears to be comprised of a Santa Clara Formation block that has slid downhill while generally staying intact. The slideplane comprised of jumbled and/or sheared Santa Clara Formation deposits, could act as a preferential pathway for the migration of groundwater from the MAA/CTA to the Shingle Valley alluvial groundwater system.

Groundwater has been encountered within the Santa Clara Formation at the CTA at elevations of approximately 27 feet to 53 feet bgs. At the MAA, groundwater has been encountered at elevations of approximately 25 feet to 68 feet bgs. The direction of groundwater flow within the Santa Clara Formation is not completely understood in this area.

Based on the average dip of the Santa Clara Formation, the water-bearing zones that are monitored in MAA/CTA apparently dip beneath the alluvium of Middle Shingle Valley, thus possibly geologically isolating any chemicals in the Santa Clara Formation from the Shingle Valley alluvial groundwater systems, but probably not from the Shingle Valley Santa Clara Formation groundwater system. This assumes that the Santa Clara Formation groundwater-bearing zones are continuous, homoclinal, and that groundwater flows down-dip.

The zones that yield groundwater within the Santa Clara Formation are thought not to be extensive. Groundwater apparently migrates within the more permeable materials within the Santa Clara Formation. The moderate to high percentages of fine grain sediments in the Santa Clara Formation soils potentially inhibits the rate of groundwater migration.

The surface at MAA/CTA generally slopes from southwest to northeast at approximately 0.12 ft to 0.14 ft/ft. There are three ephermal surface water drainages within the MAA/CTA. All three flow perpendicular into the Shingle Valley axial drainage and trend to the east-northeast. Small intermittent creeks are located within all three MAA/CTA tributary valleys.

The geology and hydrogeology of MAA/CTA needs to be further defined, especially the relationship between MAA/CTA, and the alluvial and Santa Clara Formation groundwater in Shingle Valley, and the potential of the landslide as a migration pathway.

6.3.b. Remedial Investigations:

TCE has been detected sporadically in soil at stations in CTA, and consistently at station 1860 in MAA. All of the soil samples detected TCE concentrations of less than 1 mg/kg. Other VOCs detected in soil are acetone at a high of 56 mg/kg

at station 1860, methylene chloride at a high of 16 mg/kg, Freon 11 and Freon 113 at concentrations of less than 1 mg/kg and trace concentrations of tetrahydrofuran and unknown VOCs.

In groundwater, TCE has been detected at a maximum concentration of 43,000 μg/l, Freon 11 at a maximum concentration of 330,000 μg/l, Freon 113 at a maximum concentration of 8,500 μg/l, and TCA at a maximum concentration of 590 μg/l. The source of contamination and extent of the plume in MAA/CTA is not fully defined.

6.3.c. Interim Measures: No interim measures have been implemented at the MAA/CTA.

6.4. Open Burning Facility (OBF) - Panhandle

The OBF is located in the Panhandle (Figure 3) portion of the UTC. The OBF is located on the crest of a ridge that trends north-south. The ridge is relatively smooth and slopes gently to the north, where the drainage empties to the west. The majority of the OBF drains toward the northwest and west.

The OBF is used to thermally treat waste solid rocket propellant and explosive contaminated wastes that are generated onsite. It consists of 10 open burn units (OBUs) where propellant and/or explosives wastes and residues are burned; two of the OBUs are active and eight are inactive. Historically, the OBUs were made entirely of earthen materials, and all wastes were treated on the ground surface. Currently, the waste is treated in steel containment pans. Each of the OBUs consists of a rectangular area approximately 20 feet wide by 30 feet long surrounded on three sides by earthen berms. The propellant related wastes are placed inside these units, armed with igniters, and ignited remotely from a concrete shelter located at the northwest corner of the OBF. The OBUs are within a fenced area in the Panhandle. The OBF is a RCRA-regulated thermal treatment facility.

6.4.a. Site Geology and Hydrogeology

The Santa Clara Formation occurs as a discontinuous and complex array of sedimentary layers beneath and across the OBF. Quaternary colluvium occurs as a surface cap varying from 1 to 5 feet thick across the OBF. Quaternary alluvium is present as surficial deposits in isolated locations and as thin localized deposits along the two small drainages that trend north and west of the OBF.

Groundwater occurs in Santa Clara Formation deposits at the OBF. The Santa Clara Formation's ability to contain and transport water is typically small and extremely variable. A continuous flow system does not exist in the Santa Clara

Formation deposits at the OBF as a discontinuous series of groundwater-bearing lenses have been encountered in drilling explorations.

Based on the most recent investigations at the OBF in 1994, it is believed that water-bearing zones at the OBF consist of an agglomeration of water bearing lenses varying from low to medium permeability. Each water-bearing lens is separated from other water-bearing lenses by lower permeability soils that have stringers and/or thin lenses of higher permeability materials scattered throughout. Basically, there are three principal groundwater zones, the upper perched zone (UPZ), the lower unconfined zone (LUZ), and the lower confined zone (LCZ) at the OBF.

The UPZ consists of the upper-most agglomeration of water-bearing lenses. The UPZ is approximately 30 to 40 feet deep. The UPZ is truncated along its eastern boundary by an escarpment. This north-south trending escarpment forms the western boundary for San Felipe Creek. The bottom of the water-bearing portion of the UPZ in the escarpment area is 32 feet bgs from the top of the escarpment. As such, the escarpment physically truncates the UPZ. The only eastern flow of UPZ groundwater along the escarpment would have to occur as seepage out the escarpment face. The Calaveras Fault and San Felipe Creek both lie east of the escarpment. Along the southern boundary there is an unconformity within the Santa Clara Formation which cuts beneath the OBF, dipping to the northeast at approximately 35° and inhibits groundwater flow vertically and to the south. This unconformity occurs as the surface of a sequence of low permeability clay layers and appears to form the bottom of the LUZ. The unconfomity has been interpreted to be an intraformational erosional surface within the Santa Clara Formation. It may in fact be the expression of a splay fault off the Calaveras Fault, rather than purely an erosional feature. Along its western boundary the UPZ water-bearing lenses interfinger with the LUZ as the ground surface decreases in elevation. The northern boundary of the UPZ is not known. It appears that most UPZ groundwater in this area discharges into the LUZ.

The LUZ consists of the agglomeration of water-bearing lenses that underlie the UPZ. The LUZ appears bounded to the south by the unconformity and possibly bounded to the east by the Calaveras Fault. The boundaries of the LUZ in the west and north are not defined. To the east, the LUZ, unlike the UPZ, does not appear to be truncated by the escarpment. It is not apparent whether the LUZ terminates at Calaveras Fault or not. The effect of the fault on groundwater flow may not be of critical importance if groundwater plume migration control demonstrates that the plume is not moving towards the Fault. If plume control is not achieved, the geology and hydrogeology of the Fault zone and the area east of the Fault zone should be characterized to fully understand the groundwater movement in the LUZ as it reaches San Felipe Creek and the Calaveras Fault.

The LCZ which has been named to refer to all water-bearing zones located beneath the LUZ, does not appear to be impacted by VOCs. LCZ does not appear to be hydraulically connected to the UPZ or LUZ.

6.4.b. Remedial Investigations

Soil investigation and remediation in the Panhandle have included the open burn units and areas designated as the "Debris Area", the "Magnetic Anomaly Area" and Areas 1-7. The investigation and remediation is summarized as follows.

Principal contaminated areas identified in the OBF were OBU-1, OBU-2 , OBU-3 and OBU-5. Soils in these OBUs contained TCE up to 1300 mg/kg. Also, debris mixed with soil was observed in OBU-3 during installation of a Soil Vapor Extraction (SVE) system. These debris impacted soils were found in near-surface soils and contained TCE and lead. Due to the elevated levels of lead and the presence of debris these soils were excavated, aerated and hauled off to a land disposal facility in May of 1994. The remaining soils in this area are primarily impacted by VOCs and are being remediated with a horizontal and vertical SVE system.

The other OBUs were also investigated and soils were not contaminated.

Soil investigation within the fenced area other than the OBUs was done at 7 areas. Contamination was found in three of these areas (Areas 1,3 and 7).

Area 1 which was located 200 feet northeast of OBU-1 was observed to mainly contain ash and metals in the ash. Contaminated soils in the this area were excavated and disposed of in an approved land disposal facility. This activity was completed in 1993.

Area 3 was located approximately 50 feet east of OBU-1. This area also contained ash which was contaminated with lead. Contaminated soils in this area were also excavated and hauled off to a land disposal facility in 1993.

Area 7 was located about 100 feet south of OBU-6. Soils in this area were found to contain ash, pieces of metal, pieces of glass, grey polybutadiene acrylic acid acrylonitrile polymer (PBAN) material, reddish brown PBAN material, and a black viscous material. The analysis showed the presence of VOCs (1,3-dichlorobenzene), SVOCs (primarily PCBs, 1,3,5-trichlorobenzene and 2,4,6 trichlorobenzenamine) and metals (primarily lead and copper). Contaminated soils and foreign materials in this area were excavated and hauled off to a land disposal facility in 1992.

Outside of the fenced area of the OBF, there was an area called the Debris Area.

The Debris area was located east of the fenced area and occupied an area approximately 275 feet long by an average of about 75 feet wide by an average depth of 5.5 feet. The Debris Area consisted of a total of approximately 4,000 cubic yards of soils and debris impacted by VOCs and metals (lead, copper and zinc). The debris generally consisted of small steel pipes, crushed rusted drums, assorted metal objects, ash, and glass fragments. Soils in the Debris Area of the Panhandle were remediated by excavation and hauling off to a disposal facility.

Another impacted area in the Panhandle and outside of the fenced area was an area near the Debris Area called the Magnetic Anomaly Area. This area was discovered to contain buried pipes, flattened burned-out drums, and other metal debris. Levels of VOCs in excavated soils and soils at the bottom of the excavated area were at or below 0.006 mg/kg. The trench was backfilled with soil and the debris from this area was hauled off to a disposal facility.

Groundwater investigation and remediation in the Panhandle is summarized below.

A total of 57 groundwater monitoring and extraction wells have been installed in the Panhandle. The UPZ and LUZ are impacted by VOCs. The primary VOCs include TCE at a maximum of 259,000 μg/l, TCA at a maximum of 13,920 μg/l, and carbon tetrachloride, DCE, chloroform and tetrahydrofuran at lower concentrations.

6.4.c. Interim Measures

Most of the contaminated soil in the panhandle has been remediated by excavation and disposal in a landfill. Some of the VOC contaminated soil is being treated by a soil vapor extraction system. Groundwater is being remediated by extraction and treatment through air strippers and carbon adsorption units.

The groundwater extraction system in place at the OBF was installed in 1992. This system consists of 6 extraction wells and the extracted water is treated at Station 2404. This system was evaluated in 1994 and recommendations were made to improve the system.

The evaluation concluded that the groundwater plume in the OBF area is not fully defined, the groundwater extraction system does not fully contain the plume, and the hydraulic connection between Calaveras Fault, San Felipe Creek and the groundwater system in the OBF is not known.

Based on these conclusions it was recommended that additional extraction and monitoring wells be installed to fully define and control the groundwater plume in the OBF. There is no proposal to define the hydraulic connection between the

Calaveras Fault, San Felipe Creek and groundwater in the OBF. However, if plume migration control is fully achieved, and it is demonstrated that the plume is not moving towards the Fault or the Creek, evaluating the Fault or the Creek may not be necessary.
The recommendations of the evaluation are being implemented. Further evaluation of the system may be necessary in the future.

7. Water Reclamation

UTC reclaims the extracted groundwater which is the result of groundwater remediation throughout the site. The VOC contaminated groundwater through the site is treated at several treatment units located in Shingle and Mixer Valleys. These are treatment systems 2402, 2403 and 2405 in Shingle Valley, and treatment system 2404 in Mixer Valley. Each treatment unit consists of an air stripper and carbon adsorption units with the exception of 2405 which uses carbon only. Station 0535 in Mixer Valley and 1710 in the Research and Advanced Technology Area also have carbon adsorption units. Treated water from 2402, 2403, 2404, 2405 and 1710 is discharged into the treated water reuse system. Treated water from 0535 system is discharged to the 2404 treatment system.

Treated groundwater from the remediation systems at the site is stored in ponds 2140 and 2130.

Pond 2140 (near station 0026) is located in Upper Shingle Valley. The pond is bordered by ridge slopes to the northeast and Shingle Creek is located about 150 to 200 feet to the southwest. The pond is rectangular in shape and it is 135 feet long by 70 feet wide with a maximum depth of 8 feet. It has a storage capacity of 333,000 gallons.

The pond is underlain by Quaternary alluvial deposits of unconsolidated clays, silt, sands and gravels. The average permeability of the underlying soils beneath the pond is approximately 10^{-5} cm/sec. If seepage occurs this would create a mound and in so doing would have a beneficial impact by directing the chemical plume in Upper Shingle Valley towards the center of the valley where the groundwater extraction wells are located. Groundwater in the vicinity of the pond and soils in the pond do not appear to be contaminated.

Pond 2130 (near station 0730) is located in Lower Mixer Valley. This pond is bordered on the west by a ridge, on the south by an embankment and Manufacturing Road, and on the east by another ridge behind which is Las Animas Road. The pond has a capacity of approximately 19 million gallons. This pond is located eastward of a groundwater contaminant plume which is in Lower Mixer Valley.

The lithology of the soils underlying pond 2130 consists predominantly of low to high plasticity organic clays. The seepage from this pond is expected to be minimal. Groundwater downgradient of this pond and soils in the pond do not appear to be

contaminated.

Onsite, treated groundwater is used for landscape irrigation, pasture irrigation and dust control all over the site, and for dust control, landscape irrigation and fire control at the County parks. Originally, treated groundwater was also used for dust control and soil compaction at a construction site known as Silver Creek Country Club.

California Water Code Section 13512 declares it is the intention of the Legislature that the State undertakes all possible steps to encourage development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water demands of the State.

The effluent from reclamation activities should meet drinking water standards at a minimum or meet standards achieved by best readily available technology.

8. **Regulatory Status**: The Board has adopted the following orders for the site:

- Waste Discharge Requirements, Order No. 89-008, updated January 18, 1989
- Water Reclamation Requirements, Order No. 91-006, adopted January 16, 1991.
- Site Cleanup Requirements, Order No. 94-064, adopted May 18, 1994, and amended May 17, 1995.

9. **Basin Plan:** The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986, and the State Board Approved it on May 21, 1987. The Board has amended the basin plan several times since then. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

The existing and potential beneficial uses of Anderson Reservoir, located approximately one half mile downgradient of the discharger's property, include:

a. Municipal Supply
b. Ground water recharge
c. Non - contact water recreation
d. Warm and cold water habitat
e. Wildlife habitat
f. Fish spawning

Anderson Reservoir ultimately discharges to Coyote Creek, which flows northwest to South San Francisco Bay. The existing and potential beneficial uses of Coyote Creek and tributaries include:

a. Industrial process supply
b. Water contact recreation
c. Ocean commercial and sport fishing
d. Warm fresh water habitat
e. Preservation of areas of special biological significance
f. Wildlife habitat
g. Marine habitat
h. Fish migration and spawning
i. Fresh water replenishment
j. Groundwater recharge

The existing and potential beneficial uses of the groundwater underlying and adjacent to the discharger's facilities include:

a. Industrial process water supply
b. Industrial service supply
c. Agricultural supply
d. Municipal and domestic supply

10. **Other Board Policies:** Board Resolution No. 89-39, "Sources of Drinking Water" defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high total dissolved solids (TDS), low yield, or naturally high contaminant levels. The shallow/alluvial ground water zone(s) at this site qualify as potential sources of drinking water. Most portions of the deeper Santa Clara Formation groundwater do not qualify as potential sources of drinking water based on the low yield criteria.

Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is feasible. This site reclaims all of the treated groundwater.

11. **State Board Policies:** State Board Resolution No. 68-16 "Statement of Policy with Respect to Maintaining High Quality Waters in California" calls for maintaining the existing high quality of State waters unless it is demonstrated that any change would be consistent with the maximum public benefit and not unreasonably affect beneficial uses. This is based on a Legislative finding, contained in Section 13000, California Water Code, which states in part that it is State policy that "waters of the State shall be regulated to attain the highest water quality which is reasonable."

State Board Resolution No. 92-49, "Policies for Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. This order and its requirements are consistent with the provisions of resolution

No. 92-49 , as amended.

12. **Risk Assessment**

UTC developed a baseline risk assessment and human and environmental health evaluation report for OU1 and the Panhandle area of OU2 in 1992. Similar risk assessment should be performed for the side valleys.

13. **Preliminary Cleanup Goals:** The discharger will need to make assumptions about future cleanup standards for soil and groundwater in order to determine the necessary extent of remedial investigation, interim remedial actions, and the draft cleanup plan. Pending the establishment of site-specific cleanup standards, the following preliminary cleanup goals should be used for these purposes:

    a. Groundwater: Applicable water quality objectives (e.g. maximum contaminant levels, or MCLs) or, in the absence of a chemical-specific objective, risk based levels (e.g. drinking water equivalent levels).

    b. Soil: 1 mg/kg total volatile organic compounds (VOCs) of higher toxicity, 5 mg/kg for total VOCs of lower toxicity, 10 mg/kg total semi-volatile organic compounds (SVOCs), and background concentrations of metals. Higher toxicity VOCs are defined as VOCs that have MCL/alternate action limit (ACL) of 5 μg/l or less, or are classified (weight of evidence) as an "A" or "B" carcinogen. Lower toxicity VOCs are defined as VOCs that have MCL/ACL higher than 5 μg/l or higher, or are classified as a "C" or "D" carcinogen.

14. **Basis for 13304 Order:** The discharger has caused or permitted, and threatens to cause or permit, waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance. Containment and cleanup measures need to be continued to alleviate the threat to the environment posed by the continued migration of pollutants.

15. **Cost Recovery:** Pursuant to California Water Code Section 13304, the discharger is hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.

16. **CEQA:** This action is an Order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

17. **Notification:** The Board has notified the discharger and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site

Cleanup Requirements for the discharger and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

18. **Public Hearing:** The Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to Sections 13304 and 13523 of the California Water Code that the discharger (or its agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge, storage, or treatment of wastes or materials in a manner which will degrade water quality or adversely affect beneficial uses of the groundwater and surface waters of the State is prohibited.

2. Further significant migration of pollutants through surface or subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of wastes or hazardous substances are prohibited.

4. The discharge of contaminated groundwater into creeks and surface water is prohibited. Specifically, no detectable concentrations of contaminants shall be allowed in surface waters at or beyond the property boundary, and no concentrations of contaminants in excess of preliminary cleanup standards shall be allowed in on-site surface waters. Further, phenol concentrations in on-site surface waters shall not exceed 2,560 ppb, in order to protect freshwater aquatic habitat.

B. TASKS

1. REPORT ON ADDITIONAL INVESTIGATION IN THE MTA
COMPLIANCE DATE: November 1, 1995

Submit a technical report acceptable to the Executive Officer which documents completion of activities proposed in the following workplan:

Side Valley Groundwater Characterization Workplan - Motor Test Area , August 1994

2. REPORT ON ADDITIONAL INVESTIGATION IN THE MAA/CTA
COMPLIANCE DATE: December 15, 1995

Submit a technical report acceptable to the Executive Officer which documents completion of activities proposed in the following workplan:

Side Valley Groundwater Characterization Report - Motor Assembly Area/Component Test Area, October 1994

3. REPORT ON ADDITIONAL INVESTIGATION IN THE PANHANDLE
COMPLIANCE DATE: April 1, 1996

Submit a technical report acceptable to the Executive Officer which documents completion of activities proposed in the following workplan:

Evaluation and Workplan for Improvement of the Groundwater Extraction System at the Open Burning Facility (Panhandle), July 1994

4. WORKPLAN FOR ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION IN THE PANHANDLE
COMPLIANCE DATE: June 1, 1996

Submit a workplan acceptable to the Executive Officer to fully define the groundwater plume in the Panhandle, demonstrate plume migration control and if necessary determine the impact of the groundwater plume on the Calaveras Fault and San Felipe Creek.

5. COMPLETION OF ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION IN THE PANHANDLE
COMPLIANCE DATE: December 1, 1996

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the Task 4 workplan. The technical report should define the vertical and lateral extent of the pollution down to concentrations at or below typical cleanup standards for soil and groundwater.

Tasks 4 and 5 may be waived by the Executive Officer if the investigations reported in Task 3 satisfy the requirements specified in Tasks 4 and 5.

6. WORKPLAN FOR ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION IN THE MOTOR TEST AREA
COMPLIANCE DATE March 1, 1996

Submit a workplan acceptable to the Executive Officer to identify the sources of groundwater contamination in the MTA, fully define the extent of soil and groundwater contamination, and identify the impact of groundwater contamination

in the MTA on Shingle Valley groundwater and surface water.

7. **COMPLETION OF ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION IN THE MOTOR TEST AREA**
COMPLIANCE DATE: September 1, 1996

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the Task 6 workplan. The technical report should define the vertical and lateral extent of the pollution down to concentrations at or below typical cleanup standards for soil and groundwater.

Tasks 6 and 7 may be waived by the Executive Officer if the investigations reported in Task 1 satisfy the requirements specified in Tasks 6 and 7.

8. **WORKPLAN FOR ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION IN THE MOTOR ASSEMBLY AND COMPONENT TEST AREAS**
COMPLIANCE DATE May 1, 1996

Submit a workplan acceptable to the Executive Officer to identify the sources of groundwater contamination in the MAA/CTA, fully define the extent of soil and groundwater contamination, and identify the impact of groundwater contamination in the MAA/CTA on Shingle Valley groundwater and surface water.

9. **COMPLETION OF ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION IN THE MOTOR ASSEMBLY AND COMPONENT TEST AREA**
COMPLIANCE DATE: February 1, 1997

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the Task 8 workplan. The technical report should define the vertical and lateral extent of the pollution down to concentrations at or below typical cleanup standards for soil and groundwater.

Tasks 8 and 9 may be waived by the Executive Officer if the investigations reported in Task 2 satisfy the requirements specified in Tasks 8 and 9.

10. **INTERIM REMEDIAL ACTION WORKPLAN FOR THE MOTOR TEST AREA**
COMPLIANCE DATE: September 1, 1996

Submit a workplan acceptable to the Executive Officer to evaluate interim remedial action alternatives and to recommend one or more alternatives for implementation in MTA. The workplan should specify a proposed time schedule.

Work may be phased to allow the investigation to proceed efficiently.

11. COMPLETION OF INTERIM REMEDIAL ACTIONS IN THE MOTOR TEST AREA
COMPLIANCE DATE: March 1, 1997

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the task 10 workplan. For ongoing actions, such as soil vapor extraction or groundwater extraction, the report should document start-up as opposed to completion.

12. INTERIM REMEDIAL ACTION WORKPLAN FOR THE MOTOR ASSEMBLY AND COMPONENT TEST AREAS
COMPLIANCE DATE: February 1, 1997

Submit a workplan acceptable to the Executive Officer to evaluate interim remedial action alternatives and to recommend one or more alternative for implementation in the MAA/CTA. The workplan should specify a proposed time schedule. Work may be phased to allow the investigation to proceed efficiently.

13. COMPLETION OF INTERIM REMEDIAL ACTIONS IN THE MOTOR ASSEMBLY AND COMPONENT TEST AREA
COMPLIANCE DATE: August 1, 1997

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the task 12 workplan. For ongoing actions, such as soil vapor extraction or groundwater extraction, the report should document start-up as opposed to completion.

14. PROPOSED FINAL REMEDIAL ACTIONS AND CLEANUP STANDARDS FOR OU2
COMPLIANCE DATE: December 1, 1997

Submit a technical report acceptable to the Executive Officer containing:

a. Results of the remedial investigation
b. Evaluation of the installed interim remedial actions
c. Feasibility study evaluating alternative final remedial actions
d. Risk assessment for current and post cleanup exposures for the side valleys
e. Recommended final remedial action and cleanup standards
f. Implementation tasks and time schedule

Items b and c should include projections of cost, effectiveness, benefits , and impact on public health, welfare, and the environment of each alternative action.

Items a through c should be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency plan (40 CFR Part 30), CERCLA guidance documents with respect to remedial investigations and feasibility studies, Health and Safety Code Section 25356.1(c), and State Board Resolution No. 92-49 as amended ("Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304").

Items a through e should consider the preliminary cleanup goals for soil and groundwater identified in Finding 13.

9. **Delayed Compliance:** If the discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the discharger shall promptly notify the Executive Officer and the Board may consider revision to this Order.

C. WATER RECLAMATION SPECIFICATIONS

1. **Limits:** Reclaimed water as applied shall meet the following limits:

Constituent	Instantaneous Maximum Limit (μg/l)	Analytical Method
Volatile Organic Compounds		U.S. EPA Method 8240,8010,8020 or equivalent
Vinyl Chloride	0.5	
Benzene	0.5	
All others, per constituent	5.0	
Semi-Volatile Organic Compounds		U.S. EPA Method 8080, 8270 or equivalent
PCBs	0.5	
All others, per constituent	5.0	
Total Petroleum Hydrocarbons	50.0	U.S. EPA Method 8015 or equivalent

2. **Runoff Control:** No reclaimed water shall be allowed to escape from the authorized use areas by airborne spray, nor by surface flow except in minor amounts associated with good irrigation practice, nor from conveyance facilities.

3. **Application Limitations:** No treated groundwater shall be applied to areas of reuse during rainfall , or when soils are saturated to a point where runoff is likely to occur.

4. **Public Contact:** Adequate measures shall be taken to minimize public contact

with the reclaimed water, and to inform the public by placing legible conspicuous warning signs with proper wording at adequate intervals around the use and storage areas.

5. **Cross Connection:** There shall be no cross-connection between potable water supply and any piping containing treated groundwater.

6. **Freeboard:** The storage ponds shall be operated to have a minimum of 2 feet of freeboard to prevent overflows.

7. **Offsite Users-Form:** Offsite users shall fill out a Reclaimed Water Release Form when picking up the treated groundwater from UTC in a tanker truck. If the offsite user is receiving reclaimed water through a pipeline then the offsite user shall fill out the Reclaimed Water Release Form once, and the Form shall be effective as long as they receive the reclaimed water.

8. **Offsite Users-Order:** A copy of this order must be provided to all offsite users, and all parties must have this order available at all times for inspection by the Regional Board staff, or State/County Health Departments.

9. **Violation Notification:** In the event that UTC is unable to comply with any of the prohibitions that apply to groundwater reclamation, UTC shall notify the Board by telephone within 24 hours of the incident and confirm it in writing within one week of the telephone notification.

10. **Change in Reclamation**: In accordance with Section 13260 of the California Water Code, UTC shall file a report with the Board of any material change or proposed change in the character, location or volume of the reclaimed water.

11. **No Consumption:** Treated groundwater shall not be used for public consumption.

12. **Vehicle Signs:** Vehicles used for carrying or spraying the reclaimed water shall be identified as such with legible signs.

D. PROVISIONS

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater, including groundwater reclamation, shall not create a nuisance as defined in California Water Code Section 13050(m).

2. **Good O&M:** The discharger shall operate and maintain in good working order, and operate efficiently, any facility or control system installed by the discharger to achieve compliance with the requirements of this Order, including groundwater reclamation.

3. **Cost Recovery:** The discharger shall be liable, pursuant to California Waster Code Section 13304, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order. If the site addressed by this Order is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the discharger over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.

4. **Access to Site and Records:** In accordance with California Water Code Section 13267(c), the discharger shall permit the Board or its authorized representative:

   a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required record are kept, which are relevant to this Order.

   b. Access to copy any records required to be kept under the requirements of this Order.

   c. Inspection of any monitoring or remediation facilities installed in response to this Order.

   d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

5. **Self-Monitoring Program:** The discharger shall comply with the Self-Monitoring Program as attached to this order and as may be amended by the Executive Officer.

6. **Contractor Qualifications:** All technical reports or documents which contain hydrogeological plans, or engineering specifications, shall be signed by or stamped with the seal of a registered geologist, engineering geologist or professional engineer who was in responsible charge of the work, and who certifies the completeness and accuracy of the respective data or information being submitted under their charge.

7. **Lab Qualifications:** All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed or other methods approved by the Board. All laboratories shall maintain quality assurance/quality control records for Board review. The discharger shall maintain the certified analytical results for five

years, and make them available to the Board upon request.

8. **Document Distribution:** A copy of all correspondence, reports, and documents pertaining to compliance with this Order shall be provided in full, to the following agencies:

    a. Santa Clara Valley Water District
    b. U.S. Environmental Protection Agency, Region IX

    The discharger shall provide a copy of cover letters, title pages, table of contents and the executive summaries of above compliance reports - except for the annual progress reports, workplans for groundwater remediation, and workplans for soil remediation which shall be submitted in full to the following agencies:

    a. Santa Clara County Department of Environmental Health
    b. California EPA/DTSC Site Mitigation Branch

    The Executive Officer may require an additional copy of correspondence, reports and documents pertaining to compliance this Order to a local repository for public use.

9. **Reporting of Changed Owner or Operator:** The discharger shall provide written notification of any changes in site occupancy and ownership associated with the facility described in this Order within one month of such changes.

10. **Reporting of Hazardous Substance Release:** If any hazardous substance as defined in California Code of Regulations, Title 22, is discharged in or on any waters of the State, or discharged and deposited where it is, or probably will be discharged in or on any waters of the State, the discharger shall report such discharge to this Board, at (510) 286-1255 on weekdays during office hours from 8 AM to 5 PM, and to the Office of Emergency Services at (800) 852-7550 during non-office hours. Verbal notification is required within 3 hours of discovery of the spill, and a written report shall be filed with the Board within five (5) working days and shall contain information relative to: the nature of the waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons notified.

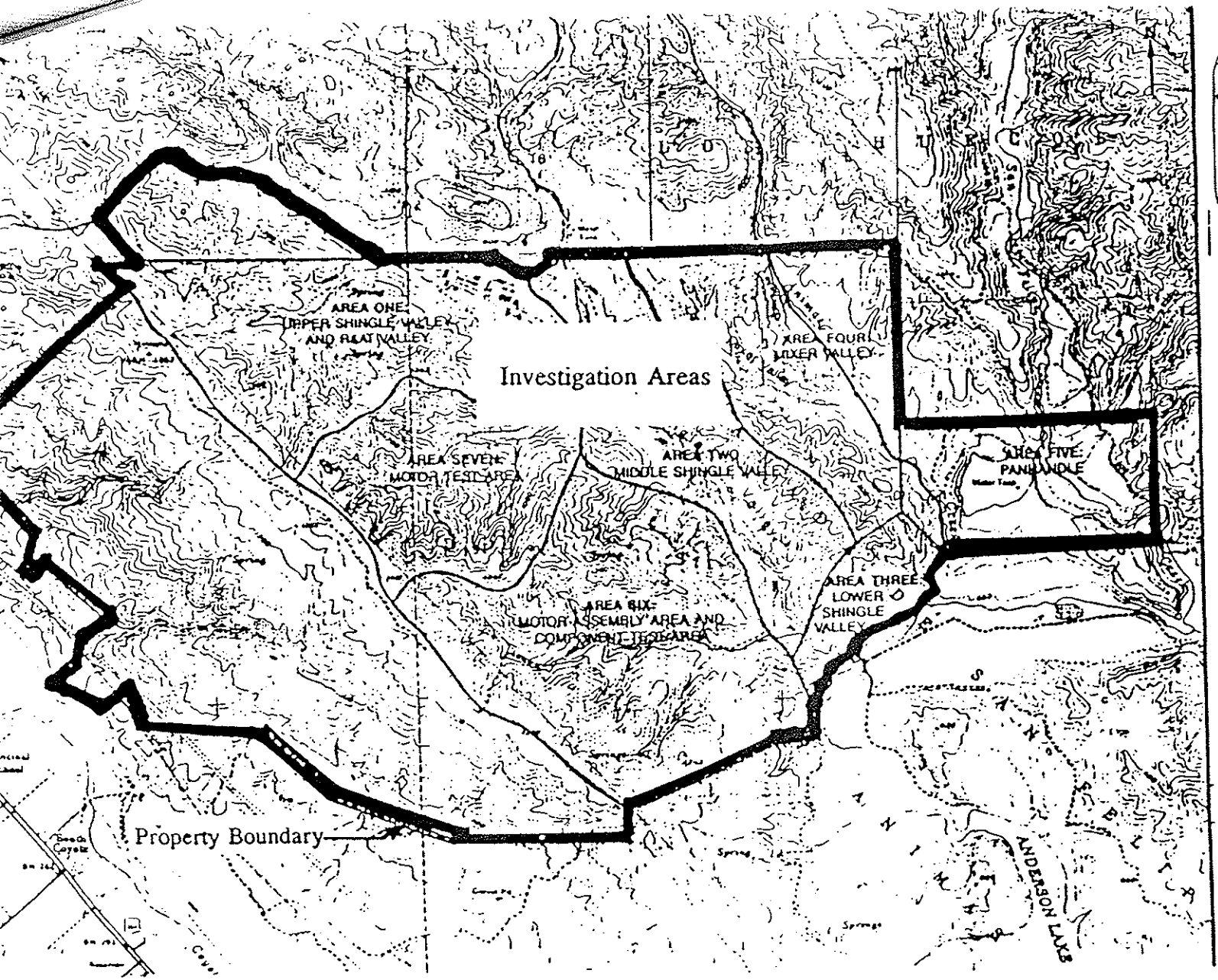
11. **Periodic SCR Review:** The Board will review this Order periodically and may revise the requirements when necessary.

I, Lawrence P. Kolb, Acting Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on September 13, 1995.

9/14/95
Date

Lawrence P. Kolb
Lawrence P. Kolb
Acting Executive Officer

Attachments: Figures 1-3
Self-Monitoring Program



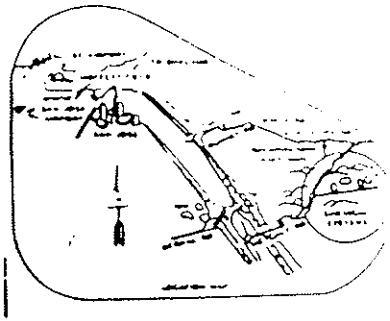


FIGURE 1
INVESTIGATION AREAS

Not to Scale

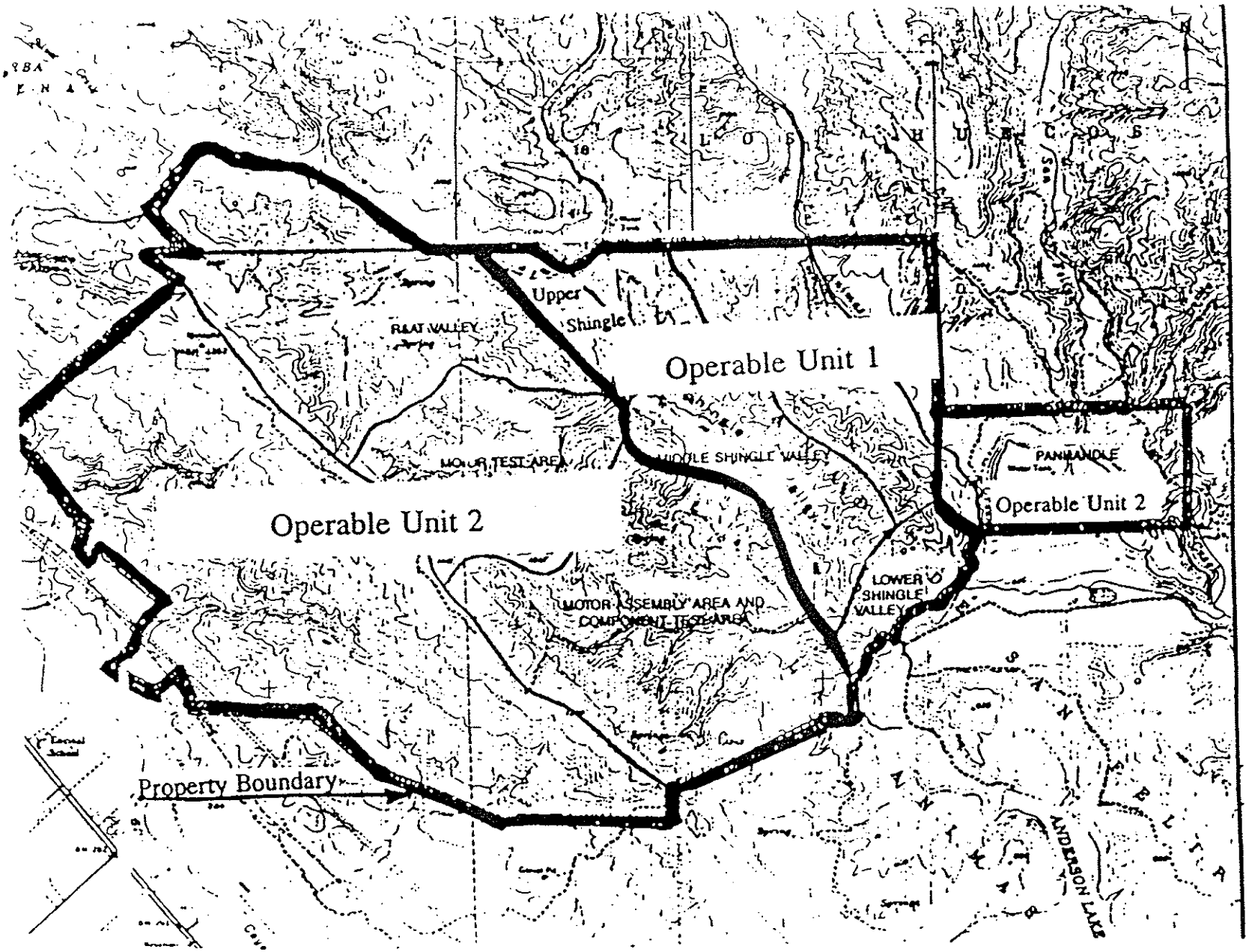


FIGURE 2
OPERABLE UNITS

Not to Scale

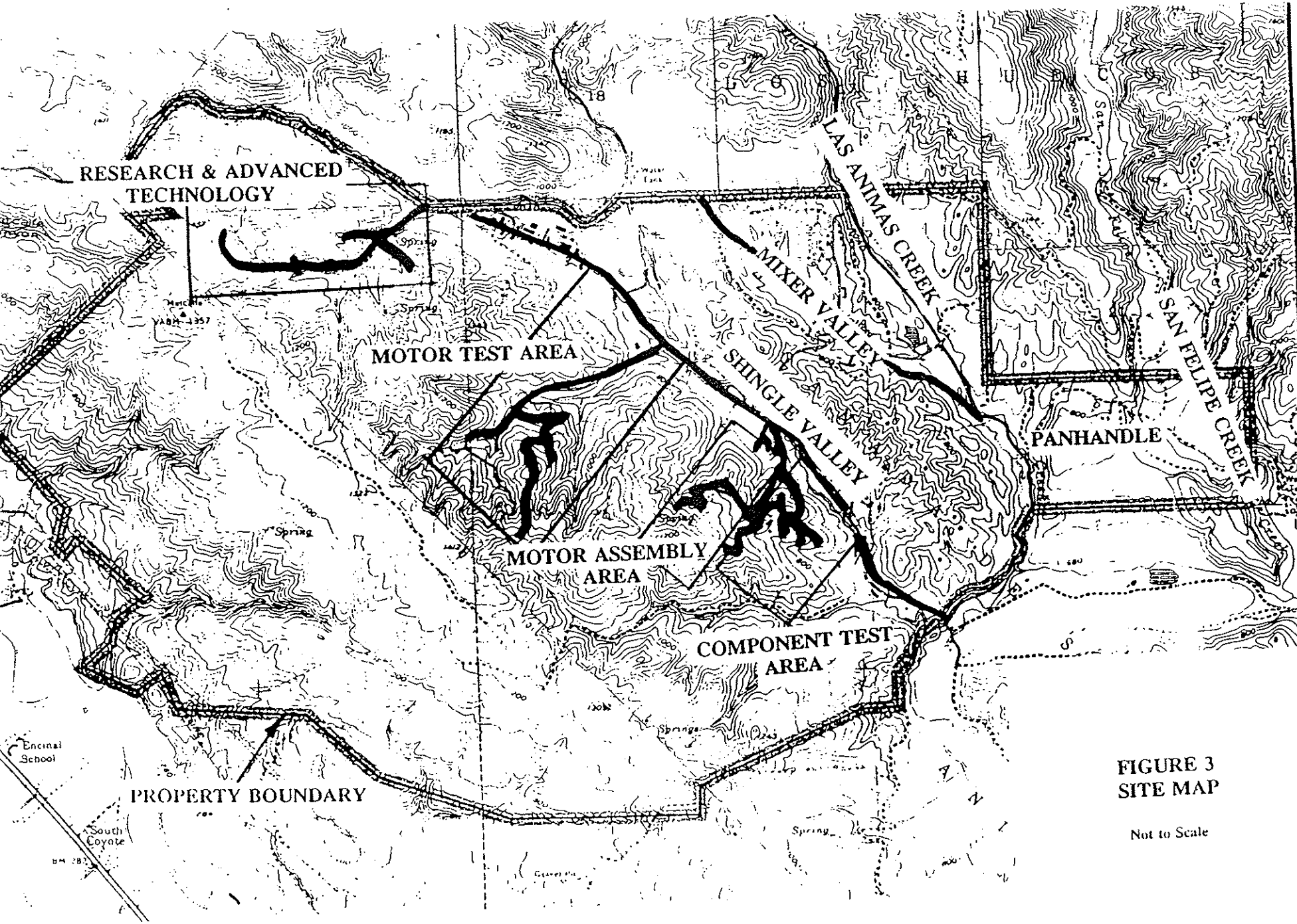


FIGURE 3
SITE MAP

Not to Scale

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

GROUNDWATER and SURFACE WATER SELF-MONITORING PROGRAM

FOR

UNITED TECHNOLOGIES CORPORATION
CHEMICAL SYSTEMS DIVISION
OPERABLE UNIT 2

600 Metcalf Road

Santa Clara County

ORDER NO. 95-193

Adopted on
September 13, 1995

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR:

UNITED TECHNOLOGIES CORPORATION,
CHEMICAL SYSTEMS DIVISION

for the property located at

600 METCALF ROAD
SAN JOSE
SANTA CLARA COUNTY

1. **Authority and Purpose**: The Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code Sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Board Order NO. 95-193 (site cleanup requirements).

2. **Monitoring**: The discharger shall measure groundwater elevations quarterly in all monitoring wells, and shall collect and analyze representative samples of groundwater, surface water and reclaimed water according to the Monitoring Program Plan acceptable to the Executive Officer and submitted annually on October 1.

3. **Quarterly Monitoring Reports**: The discharger shall submit quarterly monitoring reports to the Board according to the following schedule.

Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Period	Jan-March	April-June	July-Sept	Oct-Dec
Due Date	May 21	August 21	November 21	February 21

Reports from other Self-Monitoring Programs required for OU1, Water Reclamation Requirements, and Waste Discharge Requirements may be combined with these quarterly reports. The reports shall include:

a. Transmittal Letter: The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall be signed by the discharger's principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

b. Groundwater Elevations: Groundwater elevation data shall be presented in tabular form. Groundwater elevation map should be prepared for the wet and dry seasons for each monitored water-bearing zone, and shall be submitted in the second and fourth quarterly reports, respectively. Historical groundwater elevations shall be included in the fourth quarterly report each year.

c. Groundwater Analyses: All new wells shall be sampled on a quarterly basis for the first year. EPA method 8010 or 8240 or equivalent methods, pH, and turbidity tests shall be required for all new monitoring and extraction wells. Other tests such as EPA method 8270 or an equivalent method, and TPH-d shall be required for some wells, depending on the well location. Groundwater sampling data shall be presented in tabular form, and once a year an isoconcentration map should be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate, and be presented in the fourth quarterly report. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. Historical groundwater sampling results shall be included in the fourth quarterly report each year. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. Supporting data, such as lab data sheets, need not be included (however, see record keeping - below).

d. Groundwater Extraction and Treatment: The report shall include groundwater extraction results in tabular form, for each groundwater treatment system and for the site as a whole, expressed in gallons per week and total groundwater volume for the quarter. The report shall also include contaminant removal results, from groundwater extraction and treatment systems expressed in units of chemical mass for the quarter. Historical mass removal results for groundwater extraction and treatment systems shall be included in the fourth quarterly report each year. Contaminant removal results for the SVE systems in units of chemical mass shall be reported annually in the fourth quarterly report. Vapor concentrations for startup at each new SVE site visited during the quarter shall be reported in that quarterly report. The report shall also include contaminant concentrations for influent and effluent flows at all the groundwater treatment systems at the site.

e. Status Report: The quarterly report shall describe relevant work completed during the reporting period (e.g. site investigation, interim remedial measures) and work planned for the following quarter.

4. **Miscellaneous Requirements:**

a. Chemicals detected per the EPA Method requirements at a well or a creek station shall be identified and reported in the quarterly reports. When a new chemical is detected and confirmed, all pertinent information including, but not limited to, the contaminant's chemical and physical properties, the source of the new chemical, possible impacts on existing soil or groundwater treatment method(s) utilized at that location, and method of treatment shall be discussed.

b. For EPA Methods 8240 and 8270 an attempt will be made to identify any unidentified chromatographic peak that is larger than 10% of the nearest internal standard (up to 5 peaks for 8240 and 10 peaks for 8270). Based on how well the spectrum of the unidentified peak fits the National Bureau of Standards library compounds, the peak may be tentatively identified or it may be listed as unknown.

c. If an analysis identifies a significant increase (a chemical that has not previously been detected is confirmed above detection limits, or if the concentration of any chemical is at least one order of magnitude greater than detected in the previous sampling) in a pollutant concentration from a well or a creek sampling station, a second sample shall be taken within a month after the results from the first sample are available.

d. Well depths shall be determined on an annual basis and compared to the depth of the well as constructed. If greater than twenty five percent of screen is covered, the discharger shall clear the screen by the next sampling.

e. If turbidity in a well does not stabilize to within 15% relative percent difference for two consecutive purges, the need to redevelop the well will be assessed. If stabilization does not occur after redevelopment, the acceptability of chemical results from turbid wells will be evaluated on an individual basis.

f. Chemical detection limits shall be lower than cleanup standards established in the Order, unless it is technically impractical to achieve detection limits lower than cleanup levels.

5. **Violation Reports**: If the discharger violates requirements in the Site Cleanup Requirements, then the discharger shall notify the Board office by telephone as soon as practicable once the discharger has knowledge of the violation. Board staff may, depending on violation severity, require the discharger to submit a separate technical report on the violation within five working days of telephone notification.

6. **Other Reports**: The discharger shall notify the Board in writing prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.

7. **Record Keeping**: The discharger or his/her agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of five years after origination and shall make them available to the Board upon request.

8. **SMP Revisions**: Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the discharger. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

I, Lawrence P. Kolb, Acting Executive Officer, hereby certify that this Self-Monitoring Program was adopted by the Board on September 13, 1995.

9/14/95
Date

Lawrence P. Kolb
Acting Executive Officer